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Predictive factors of Uterine Rupture

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Abstract

Objectives: To assess the frequency and predictive factors of uterine rupture on no-scar uterus and on scarred uterus in an intermediate level health hospital in Dakar.

Method of study: This retrospective was carried out by the Philippe Maguilen Senghor Health Center in Yoff (Dakar) during the period from January 1, 2011 to December 31, 2017. It included all the women who gave birth there "a single pregnancy after 22 weeks of amenorrhea with a longitudinal fetal presentation or admitted after childbirth.

We had studied socio-demographic characteristics and risk factors for uterine rupture. The extracted data was analyzed first on Microsoft Excel 2016 and then on EPI info.

Results: Over 7 years, 29,332 deliveries of single pregnancies were recorded in our structure with 54 uterine ruptures, and a frequency of 0.18%. Induction of labor was spontaneous in 47 of the patients who presented with uterine rupture; labor was artificially induced in only 7 patients, with frequencies of 0.17% and 0.36% of all uterine ruptures, respectively. Considering the risk factors of uterine rupture, 5 parameters were discriminating: multiparity ($p < 0.0001$), transfer from another health facility for admission ($p < 0.0001$), type of fetal presentation ($p = 0.0001$), the presence of a uterine scar ($p < 0.0001$) and the age class ($p < 0.0001$).

Conclusion: The rate of uterine rupture in our structure is certainly low but should call for more vigilance during labor with a focus on evacuated patients who have started their work in another structure, patients with a uterine scar and multiparous. Childbirth on a scar uterus is a reasonable option after eliminating a potential cause of obstructed labor.

Keywords: Ruptured uterus; Scar uterus; Risk factors

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Introduction

Uterine rupture is a serious obstetric complication which brings into play in the short term the if not vital prognosis of at least obstetric patients [1]. The incidence of uterine rupture is very low in industrialized countries, observed mainly during an attempt at vaginal birth on scar uterus, of the order of 0.5 to 3 / 10,000 births [2] then that it is higher in developing countries [3]. It remains frequent, around 1/100 deliveries in Gabon, 1/151 in Senegal, 1/152 in Côte d'Ivoire, 1/226 in Benin, 1/441 in Morocco and can also occur on no-scar uterus in dystocia and bring into play the maternal and fetal prognosis [4]. However, the factors involved in the occurrence of a uterine rupture, whether complete or incomplete, on a healthy pregnant uterus or on a scarred uterus are poorly understood. The aim of this work is to assess the incidence and predictive factors of uterine rupture on no-scar uterus and on scarred one in a mid-level health facility in Dakar.

Method of Study

This retrospective study was carried out by the Philippe Maguilen Senghor Health Center in Yoff (Dakar) during the period from July 1, 2011 to June 30, 2017. It included all women who had given birth there after 22 weeks of gestation or admitted after giving birth. Data was compiled from the service's computer database with subsequent judicious confirmation of data consistency and review of medical records and files when necessary. The measurement criterion was the occurrence of uterine rupture defined by a non-surgical solution of the uterine muscle, complete or incomplete, occurring during labor or discovered after childbirth. We serialized the patients into 2 groups: with or without uterine scar. By each of the 2 groups, we studied socio-demographic characteristics and risk factors for uterine rupture.

These risk factors related to:

- * socio-demographic factors: age, parity and mode of admission.
 - * pregnancy data: gestational age, fetal presentation, uterine height at admission, the presence of a uterine scar and fetal condition at admission.
 - * obstetric factors: whether or not to induce labor, direction of labor or not, fetal weight.
- Other obstetric parameters were also studied. The extracted data was analyzed first on Microsoft Excel 2016 and then on SPSS 21, Mac version

Results

From July 1, 2011 to June 30, 2017, we collected 21 cases of uterine ruptures for 20,311 deliveries performed during the same period, an incidence of 1 case of uterine rupture out of 2,581 deliveries. In this table, the maximum uterine rupture occurs in young women, in full genital activity, 47% between 20 and 29 years old. The average age of parturients is 26 years with extremes of 15 and 45 years. The majority of published uterine rupture cases have occurred in late pregnancy or during labor [5], [6]. In our study, of the 18,359 patients (89.9%) who saw their pregnancy come to term, 18 presented a uterine rupture (85.7%). Only 3 cases (14.3%) if pregnancy does not reach term and no cases post-term. Our structure being a referral center, we received 4670 patients (23%) from the other surrounding structures and 11 cases of uterine rupture (52%) were observed in these patients against 10 cases (47.6%) in the 15,748 patients that came from themselves. Multiparity remains a determining risk factor in the occurrence of uterine rupture. In our study, of the 21 cases of uterine rupture recorded, the 19 cases were multiparous patients, ie 90.5% against 2 cases (9.5%) in nulliparous patients. Similarly, patients with a fetal weight below 3500g were more subject to uterine rupture with 19 cases observed compared to 2 cases in those with a fetal weight greater than 3500g.

	Number	Rate (%)	Number	Rate (%)	p
Age class					
< 35	25089	99,86	36	45	<0,0001*
Over 35	4284	99,59	18	55	<0,0001*
Mode of admission					
From house	15748	77,1	10	47,6	<0,0001*
transfer	4670	22,9	11	52,4	<0,0001*
Parity					
Nulliparous	7825	38,3	2	9,5	<0,0001*
Multipare	12486	61,1	19	90,5	<0,0001*
Uterus scar					
Yes	3319	30	0,90	58	<0,0001*
No	26559	24	0,09	42	<0,0001*
Gestationnel age					
Preterm	1345	6,6	3	14,3	0,07
Term	18359	89,9	18	85,7	0,07
Post-term	715	3,5			0,07
Fœtal presentation					
summit	19297	94,5	20	95,2	0,0001*
seat	969	4,7			0,0001*
forehead	18	0,8	1	4,8	0,0001*
Induction of labor					
spontaneous	19384	95	18	85,7	0,09
Triggering	349	1,7			0,09
Direction of labor					
Yes	11212	54,9	1	4,8	0,5
No	7012	34,3	19	90,5	0,5
Fœtal weight					
< 3500 g	16261	79,6	19	90,5	0,14
≥ 3500 g	4158	20,4	2	9,5	0,14

Discussion

We noted 21 cases of uterine rupture on a gravid non-scarring uterus out of 20,311 deliveries during the period of our study, ie a frequency of 0.1%. The incidence is low compared to certain African data: Gabon 1.4 [7], Tunisia 1.51% [8], which is not the case in developed countries: USA 0.3 to 0.7 % [6], Belgium 0.5% [9]. Its incidence in France is estimated according to the series between 1/1000 and 1/2000 births and reaches 1/100 in developing countries [5], [10]. This frequency is 0.8% in case of a scar uterus. This frequency has changed compared to previous studies carried out in Senegal [11]. This could be explained by the multiplication of health centers which evacuate their patients to

the referral structure, often at a fairly advanced stage of the pathology. Our structure, the Philippe Maguilen Senghor health center, due to its geographic location in the Dakar region, constitutes an essential reference center. Ruptures occur in relatively young women (the average age is 26 years old). Early marriages and early pregnancies are most often involved because most caesareans are indicated before a mechanical dystocia. Thus the first caesarean exposes to a second and also to a uterine rupture. The predominance of ruptures on scarred uterus can also be explained by the high frequency of cesareans often easily indicated, which however compromises the obstetrical future and affects the life prognosis of patients [2]. Likewise, multiparity exposes to uterine

rupture insofar as the uterus becomes more and more fragile as the patient carries a pregnancy ("glass uterus"). In our African societies, this traditional notion of procreation being deeply rooted with a fairly low level of education and information, this thus promotes tachymultiparity; Added to this is the difficulty of accessing family planning care. Large multiparous women pay a heavy price for this tragedy, due to the multiparity resulting in a weakening of the uterus. This is confirmed by the data in the literature [8-12]. In our developing countries, peripheral health structures often have difficulty respecting the terms of reference of patients to the reference structure, and this especially in terms of patient transport; some patients are thus evacuated using taxis or public transport even though this evacuation should be done using medical ambulances equipped for regular and adequate monitoring. Most of the patients who presented with uterine rupture are evacuated (52%) from peripheral health units. These evacuations take place under very precarious conditions. Patients often present with complete uterine rupture. There is the problem of decentralizing the surgical management of obstetric dystocia. Many underdeveloped countries have these difficulties in common [13]. This justifies the policy of decentralizing emergency surgical care to the district level.

Conclusion

In our developing countries, the rate of uterine rupture remains quite high compared to others. The factors used to predict this pathology are known. Therefore, it is important to make the necessary arrangements and assess the obstetric characteristics in order to avoid the occurrence of uterine rupture, if necessary ensuring effective and early management. The uterine scar, the early age of first pregnancy, the poorly organized transfer of parturients, a dystocic presentation and multiparity must be well targeted.

References

1. AHMADI S, NOUIRA M, BIBI M, et al. 2003. Rupture utérine sur utérus sain gravide. À propos de 28 cas. Gynécologie Obstétrique & Fertilité. 31: 713-717. Ref.: <https://bit.ly/2QyPscR>
2. PARANT O. 2012. Rupture utérine: prédiction, diagnostic et prise en charge. Journal de Gynécologie Obstétrique et Biologie de la Reproduction. 41 :803-816. Ref.: <https://bit.ly/2uqdl8m>
3. RABARIKOTO HF, RANDRIAMAHAVONJY R, E RF. 2010. Les ruptures utérines au cours du travail, observées au CHUA/GOB Antananarivo Madagascar. Revue d'Anesthésie-Réanimation et de Médecine d'Urgence. 2: 5-7. Ref.: <https://bit.ly/2FtP3C5>
4. ALLO FB, DIIDI N, VANGEENDERHUYSEN C, et al. 1998. La rupture utérine à la maternité centrale de référence de Niamey (Niger). Médecine d'Afrique Noire. 45.
5. BRETONES S, COUSIN C, GUALANDI M, et al. 1997. Rupture utérine. J Gynecol Obstet Biol Reprod. 26: 324-327. Ref.: <https://bit.ly/2N22xZI>
6. TURNER MJ. 2002. Uterine rupture. Best Pract Res Clin Obstet Gynaecol. 16: 69-76.
7. PICAUD A, NLOMENZE AR, OGOWET N, et al. 1989. Les ruptures utérines. A propos de 31 cas observés au centre hospitalier de Libreville(Gabon). Rev Fr Gynecol; Obstet. 84 : 411-416.
8. ZINE S, ABED A, SFAR E, et al. 1995. Les ruptures utérines au cours du travail. A propos de 106 cas observés au centre de maternité de Tunis (Tunisie). Rev Fr Gynecol; Obstet. 90: 125-92.
9. HAGNERÉ P, DENOUAL I, SOUISSI A, et al. 2011. Rupture utérine spontanée après une myomectomie: A propos d'un cas et revue de la littérature. Journal de Gynécologie Obstétrique et Biologie de la Reproduction. 40: 162-165. Ref.: <https://bit.ly/36tOdBe>
10. CATANZARITE V, COUSINS L, DOWLING D, et al. 2006. Oxytocin-associated rupture of an unscarred uterus in

- a primigravida. *Obstet Gynecol.* 191: 425-429. Ref.: <https://bit.ly/37FyvTC>
11. DIOUF A, DAO B, DIALLO D, et al. 1995. Les ruptures uterines au cours du travail en Afrique Noire. Experience d'une maternité de reference à Dakar. *Médecine d'Afrique Noire.* 42: 592-597.
12. KEITA N, DIALLO MS, ISAZY, et al. 1989. Ruptures utérines. A propos de 155 cas observés à Conakry. *J Gynecol Obstet Biol Reprod.* 18: 1041-1047.
13. DIALLO FB, IDI N, VANGEENDERHUYSEN C, et al. 1998. La rupture utérine à la maternité centrale de reference de Niamey. *Médecine d'Afrique Noire.* 5.